at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v4)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{45}$ $\sqrt{18}$ $\sqrt{20}$

$\sqrt{3 \cdot 3 \cdot 5}$ $\sqrt{3 \cdot 3 \cdot 2}$ $\sqrt{2 \cdot 2 \cdot 5}$

$3\sqrt{5}$ $3\sqrt{2}$ $2\sqrt{5}$

Question 2

Find all solutions to the equation below:

$$\frac{(x-8)^2}{9} - 2 = 7$$

First, add 2 to both sides.

$$\frac{(x-8)^2}{9} = 9$$

Then, multiply both sides by 9.

$$(x-8)^2 = 81$$

Undo the squaring. Remember the plus-minus symbol.

$$x - 8 = \pm 9$$

Add 8 to both sides.

$$x = 8 \pm 9$$

So the two solutions are $x = 17$ and $x = -1$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 6x = 91$$

Take the linear coefficient, 6, halve it and square the result. You should get 9. Add this to both sides of the equation to complete the square.

$$x^2 + 6x + 9 = 91 + 9$$

$$x^2 + 6x + 9 = 100$$

Factor the perfect-square trinomial.

$$(x+3)^2 = 100$$

$$x + 3 = \pm 10$$

$$x = -3 \pm 10$$

$$x = 7 \quad \text{or} \quad x = -13$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 5x^2 + 30x + 39$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 5 .

$$y = 5(x^2 + 6x) + 39$$

We want a perfect square. Halve 6 and square the result to get 9 . Add and subtract that value inside the parentheses.

$$y = 5(x^2 + 6x + 9 - 9) + 39$$

Factor the perfect-square trinomial.

$$y = 5((x+3)^2 - 9) + 39$$

Distribute the 5.

$$y = 5(x+3)^2 - 45 + 39$$

Combine the constants to get **vertex form**:

$$y = 5(x+3)^2 - 6$$

The vertex is at point $(-3, -6)$.